

CLAIMS

What is claimed is:

1 1. A subscriber loop interface circuit apparatus comprising:
2 a signal processor having sense inputs for a sensed tip signal and a
3 sensed ring signal of a subscriber loop, wherein the signal processor generates
4 a linefeed driver control signal in response to the sensed signals, wherein the
5 signal processor resides on an integrated circuit die.

1 2. The apparatus of claim 1 wherein the sensed tip signal includes first
2 and second sensed tip voltages, wherein a difference between the first and
3 second sensed tip voltages is proportional to a tip current, wherein the sensed
4 ring signal includes first and second sensed ring voltages, wherein a
5 difference between the first and second sensed ring voltages is proportional to
6 a ring current.

1 3. The apparatus of claim 1 wherein the signal processor is a
2 complementary metal oxide semiconductor (CMOS) integrated circuit.

1 4. The apparatus of claim 1 wherein the signal processor calculates
2 common mode and differential mode components of the subscriber loop.

1 5. An apparatus comprising:
2 a signal processor generating subscriber loop control signals in response
3 to a sensed tip signal and a sensed ring signal of a subscriber loop; and

4 a linefeed driver portion for driving the subscriber loop in accordance
5 with the subscriber loop control signals, the linefeed driver portion providing
6 the sensed tip and ring signals, wherein each of the linefeed driver portion
7 and the signal processor resides on an integrated circuit die.

1 6. The apparatus of claim 5 wherein the signal processor and the linefeed
2 driver portion reside on a same integrated circuit die.

1 7. The apparatus of claim 5 wherein the signal processor and the linefeed
2 driver portion reside on separate integrated circuit die in separate integrated
3 circuit packages.

1 8. The apparatus of claim 5 wherein the signal processor and the linefeed
2 driver portion reside on separate integrated circuit die within a same
3 integrated circuit package.

1 9. The apparatus of claim 5 wherein the integrated circuit die is a
2 complementary metal oxide semiconductor (CMOS) integrated circuit.

1 10. The apparatus of claim 5 wherein the signal processor computes
2 common mode and differential mode components of the subscriber loop.

1 11. The apparatus of claim 5 wherein the linefeed driver portion
2 comprises:

3 power circuitry providing battery feed to a ring node and a tip node of
4 the subscriber loop in accordance with the subscriber loop control signals; and

5 sense circuitry providing the sensed tip and ring signals, wherein the
6 sensed tip and ring signals correspond to a tip current and a ring current of
7 the subscriber loop.

1 12. The apparatus of claim 11 wherein the sense circuitry comprises:

2 a tip resistor series-coupled to the tip node and the power circuitry;

3 a pair of tip sampling resistors one end of each tip sampling resistor
4 connected to opposite ends of the tip resistor, the other end of each tip
5 sampling resistor forming a tip sense node;

6 a ring resistor series-coupled to the ring node and the power circuitry;

7 a pair of ring sampling resistors one end of each ring sampling resistor
8 connected to opposite ends of the ring resistor, the other end of each ring
9 sampling resistor forming a ring sense node.

1 13. The apparatus of claim 11 wherein the sensed tip signal comprises first
2 and second sensed tip voltages, wherein a difference between the first and
3 second sensed tip voltages is proportional to the tip current, wherein the
4 sensed ring signal includes first and second sensed ring voltages, wherein a
5 difference between the first and second sensed ring voltages is proportional to
6 the ring current.

1

1 14. The apparatus of claim 11 wherein the power circuitry comprises:
2 a tip control circuit, wherein the tip control circuit increases a tip node
3 voltage in response to a first tip control signal, wherein the tip control circuit
4 decreases a tip node voltage in response to a second tip control signal; and
5 a ring control circuit wherein the ring control circuit increases a ring
6 node voltage in response to a first ring control signal, wherein the ring
7 control circuit decreases a ring node voltage in response to a second ring
8 control signal.

1 15. A subscriber loop interface circuit apparatus comprising:
2 a signal processor having sense inputs for a sensed tip signal and a
3 sensed ring signal of a subscriber loop, wherein the signal processor computes
4 common mode and differential mode components of the subscriber loop.

1 16. The apparatus of claim 15 further comprising:
2 a linefeed driver portion for driving the subscriber loop in accordance
3 with subscriber loop control signals provided by the signal processor, the
4 linefeed driver portion providing the sensed tip and ring signals.

1 17. The apparatus of claim 15 wherein each of the signal processor and the
2 linefeed driver portion resides on an integrated circuit die.

1 18. The apparatus of claim 16 wherein the signal processor and the
2 linefeed driver portion reside on separate integrated circuit die within a same
3 integrated circuit package.

B
1 19. The apparatus of claim 16 wherein the signal processor and the
2 linefeed driver portion reside on a same integrated circuit die.

1 20. The apparatus of claim 16 wherein each of the signal processor and the
2 linefeed driver portion resides on separate integrated circuit die in separate
3 integrated circuit packages.

add
a